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%Human Liver
%Simulates the posterior mean parameter values from the MCMC analysis
%Plots simulation against the in vitro data

prepare @all
Kidney2009
kk = [];
fkk = [];

VVIAL=0.0119573;
VMED=0.001;
VINJ=0.0003858 ;
VAIR=VVIAL-VMED;
P1 = 0.69;
TSTOP=1.; TF=0.; TI=0.2;
PROT = 1.0;
CINT = 0.001;
MAXT = 0.0001;
%Human Liver

Liverdata = [0    9.443 4.749 1.663
0.025 9.345 4.638 1.683
0.05  8.807 4.644 1.586
0.1   9.093 4.797 1.358
0.15  8.551 4.44   1.175
0.2   7.941 3.617 0.941
0.225 7.787 3.548 0.881
0.25  7.308 3.506 0.804
0.3   7.808 3.477 0.666
0.35  7.042 3.361 0.556
0.4   6.606 2.533 0.39
0.425 6.45   2.534 0.359
0.45  NaN    2.458 0.319
0.5   NaN    2.421 NaN
0.55  5.768 2.463 NaN
0.6   5.444 1.623 0.133
0.625 NaN    1.683 0.117
0.65  NaN    1.734 0.102
0.7   NaN    1.525 NaN
0.75  4.624 1.439 NaN
0.8   4.387 0.92   0.04
0.825 NaN    1.013 0.035
0.85  NaN    0.97   0.031
0.9   NaN    0.867 NaN
0.95  3.632 0.822 NaN];

KG = 0.024 ; %Estimated to female mouse liver
RLOSS = 0.001424 ;

for pp = 2:4
    A10 = Liverdata(1, pp)'*(VAIR+P1*VMED);
    VMAX1 = 10.034e-02 ; %0.054;
    KM1 = 0.01 ; %0.45 ;

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VK = 0.0;

%MCMC Redo
    VMAX1 = 0.053 ; %0.26;
    KM1 = 0.38 ; %1.36;
    VK = 0.0 ;
    KG1 = 0.45 ;

start @nocallback

    kk = [kk, _ca1];
end % end of dose loop
fkf= [_time, kk];
disp("Human Liver")
plot(_time, kk(:,1), _time, kk(:,2), _time, kk(:,3), Liverdata(:,1),
Liverdata(:,2), Liverdata(:,1), Liverdata(:,3), Liverdata(:,1),
Liverdata(:,4), 'mixhumanliv.aps');

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